

WHAT IS CLAIMED IS:

1. A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base plate, a plurality of X electrodes arranged between the plurality of Y electrodes, and a plurality of address electrodes crossing the X and Y electrodes, comprising the steps of:

generating initializing discharges with at least one ramp waveform of voltage applied between the X electrodes and Y electrodes during an initializing period;

generating addressing discharges between the Y electrodes and the address electrodes during an addressing period; and

generating sustaining discharges between the X electrodes and Y electrodes during a sustaining period, said initializing period, said addressing period and said sustaining period being cyclically recurred,

wherein the voltage of a driving waveform for each electrode satisfies the following relational expression:

$$2V_{tAY} - V_{tXY} \leq 2V_{AY} - V_{XY} - 2V_{aoff},$$

wherein V_{tAY} denotes a discharge starting threshold voltage between the address electrodes and Y electrodes, and V_{tXY} denotes a discharge starting threshold voltage between the X electrodes and Y electrodes, respectively, when the Y

electrodes serve as cathodes,

wherein V_{AY} denotes a voltage applied between the address electrodes and the Y electrodes, and V_{XY} denotes a voltage applied between the X electrodes and the Y electrodes, respectively, at the trailing edge of the ramp waveform at the end of the initializing period, and

wherein V_{aoff} denotes an offset voltage of the voltage applied between the address electrodes and Y electrodes at the end of sustaining period.

2. A method of driving a plasma display panel according to claim 1, wherein, when a driving waveform having two or more types of offset voltages V_{aoff} is used in the sustaining period, the plasma display panel is driven by setting the voltage of the driving waveform so as to satisfy the relational expression at the end of the sustaining period.

3. A method of driving a plasma display panel according to claim 1, wherein, when a driving waveform having an alternating voltage with two or more types of amplitudes is used as a driving waveform to be applied between the address electrodes and the Y electrodes in the sustaining period, the plasma display panel is driven by setting the voltage of the driving waveform so as to satisfy

the relational expression at the end of the sustaining period.

4. A method of driving a plasma display panel according to claim 1, wherein, when the address electrodes serve as a cathode, V_{tXA} denotes a discharge starting threshold voltage between the X electrodes and the address electrodes, and V_{tYA} denotes a discharge starting threshold voltage between the Y electrodes and the address electrodes,

when the X electrodes serve as a cathode, V_{tAX} denotes a discharge starting threshold voltage between the address electrodes and the X electrodes, and V_{tYX} denotes a discharge starting threshold voltage between the Y electrodes and the X electrodes, and

the plasma display panel arranged to satisfy the following relational expression is used:

$$V_{tAY} + V_{tXA} - V_{tXY} > 0 \text{ or}$$

$$V_{tYA} + V_{tAX} - V_{tYX} > 0.$$

5. A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base plate, a plurality of X electrodes arranged between the plurality of Y electrodes, and a plurality of A electrodes crossing the X and Y electrodes, the method providing a recurring cycle of an initializing period, an addressing

period, and a sustaining period, the method comprising:

applying a ramp waveform in the initializing period, wherein a sustaining pulse applied in the sustaining period to each of the X electrodes and the Y electrodes includes an alternating pulse oscillating between both sides of a predetermined reference voltage at least in the beginning portion of the sustaining period and a pulse of positive voltage based on the reference potential at the end of the sustaining period.

6. A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base plate, a plurality of X electrodes arranged between the plurality of Y electrodes, and a plurality of address electrodes crossing the X and Y electrodes, the method providing an initializing period, an addressing period and a sustaining period being cyclically recurred, the method comprising:

applying a ramp waveform in the initializing period, wherein a waveform applied to the address electrodes in the sustaining period includes a constant voltage waveform of negative voltage based on a predetermined reference potential, which is applied at least at the end of the sustaining period.

7. A method of driving a plasma display panel according to claim 6, wherein the waveform applied to the address electrodes is a constant voltage waveform of negative voltage based on the predetermined reference potential, which is applied during the entire sustaining period.

8. A method of driving a plasma display panel according to claim 6, wherein the waveform applied to the address electrodes includes a constant voltage waveform set at the level of the predetermined reference potential at least in the beginning portion of the sustaining period and a constant voltage waveform of negative voltage based on the reference potential, which is applied at the end of the sustaining period.

9. A method of driving a plasma display panel according to claim 7 or 8, wherein the reference potential is regarded as at a ground level, and a sustaining pulse applied to each of the X electrodes and the Y electrodes in the sustaining period is an alternating pulse oscillating between both sides of the ground level.

10. A method of driving a plasma display panel

according to claim 7 or 8, wherein the reference potential is regarded as at a ground level, and

a sustaining pulse applied to each of the X electrodes and the Y electrodes in the sustaining period is an alternating pulse of positive voltage based on the ground level.

11. A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base plate, a plurality of X electrodes arranged between the Y electrodes, and a plurality of address electrodes crossing the X and Y electrodes, the method providing an initializing period, an addressing period and a sustaining period being cyclically recurred, the method comprising:

applying a ramp waveform in the initializing period, wherein a waveform applied to the address electrodes in the sustaining period includes a constant voltage waveform of positive voltage based on a predetermined reference potential at least in the beginning portion of the sustaining period and a constant voltage waveform at the level of the reference potential at the end of the sustaining period.

12. A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base

plate, a plurality of X electrodes arranged between the Y electrodes, and a plurality of address electrodes crossing the X and Y electrodes, the method providing an initializing period, an addressing period and a sustaining period being cyclically recurred, the method comprising:

applying a ramp waveform in the initializing period, wherein a waveform applied to the address electrodes in the initializing period includes a constant voltage waveform of positive voltage based on a predetermined reference potential at the end of the initializing period.

13. A method of driving a plasma display panel according to any one of claims 1, 5, 6, 11, and 12, wherein the ramp waveform applied to at least one type of the X electrodes and the Y electrodes includes a first ramp wave having a positive ramp and a second ramp wave having a negative ramp.

14. A method of driving a plasma display panel according to claim 13, wherein, in the initializing period, a waveform including the first ramp wave and the second ramp wave is applied to the Y electrodes, and a constant voltage of opposite polarity corresponding to the first ramp wave and the second ramp wave is applied to the X electrodes.

15. A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base plate, a plurality of X electrodes arranged between the Y electrodes, and a plurality of address electrodes crossing the X and Y electrodes, the method providing an initializing period, an addressing period and a sustaining period being cyclically recurred, the method comprising:

applying a ramp waveform in the initializing period, wherein at least one of a voltage between the address electrodes and the Y electrodes at the end of the initializing period, a voltage between the X electrodes and the Y electrodes at the end of the initializing period, and an offset voltage of a voltage applied between the address electrodes and the Y electrodes at the end of the sustaining period is set at a predetermined level, and

two types of discharges including a discharge between the X electrodes and the Y electrodes and a discharge between the address electrodes and the Y electrodes are caused at the end of the initializing period.